Issues concerning gender and biodiversity

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This short paper is the result of a kind invitation from IDRC to comment on gender and biodiversity. The centre's support provided me with an opportunity to reflect on the studies that the Deccan Development Society and I have been doing on rural women who come from disadvantaged social groups and from very poor households.

Thus, in this paper, the term gender is viewed with an activist's eagerness rather than an academician's depth. In most cases, "gender" and "women" are used interchangeably, because, in my work, I constantly grapple with the question of empowering the disempowered and I wait for the day when a comparatively equitable society emerges and gives us space for a more measured definition of gender. Until then, gender questions are women's questions — especially women from poorer rural communities — and I urge you to read my report with this perspective in mind.

Putting gender in the foreground while dealing with the area of biodiversity allows several issues to crop up. All the commonly used terms like food security, health security, control, and access begin to acquire new intertwined meanings. The need to examine these meanings and to find ways of discovering the fascinating dimensions they acquire makes the gender-oriented view of biodiversity so challenging.

Two broad frameworks might help us understand the "gendering" of biodiversity: the *strategic needs* of women and the *basic needs* of women. *Strategic needs* include such issues as enabling skills of leadership, political roles, room to articulate views, visibility in the public domain, mobility, etc.; *basic needs* are necessarily confined to issues of food security, nutrition, health, etc., and I deal with these first.

BASIC NEEDS

Food security

Food security is the major argument used by proponents of biodiversity. As we look at food security from the gender angle, what do we need to look at? Food availability? Food diversity? Specific foods? Nutrition security? And at what levels? Personal, household, community, regional, or national?

The gender perspective on food security through biodiversity must consider all of these issues as integral, non-detachable links in the chain of discourse. In this discourse, food security must be seen from a variety of angles:

* choice of grains,
* cooking time,

* fuel value,
* fodder component,
* taste,
* health and nutrition, and
* easier access.

As this matrix grows larger and more complex, the data and their analysis acquire finer nuances.

Choice of grains

One issue is not simply food, but what kind of food. Is the food what women actually want to eat or is it what they are forced to eat? Can they choose a grain according to the season? Certain grains are believed to be "hot" while others are "cold." Therefore, in winter and during some illnesses, women would like access to "hot" grains; whereas in summer, they might want "cold" grains. Can women also choose food based on their belief about what is good for them. Festivals and rituals demand other kinds of grains. Special foods need still other grains. Do women's farming practices allow them to accommodate all these factors?

In one matrix, women of the Deccan in India, analyzed different grains in terms of a complex set of parameters: food value, fodder, monetary value, fuelwood, capacity to increase soil fertility, pest resistance, oil production, medicinal value, storability, disease resistance, special foods, and water dependence. The crops they looked at were coriander, safflower, mustard, linseed, chilies, lathyrus, green peas, oats, winter sorghum, wheat, and lentils.

In this array of crops, women gave the top score to winter sorghum (35 out of a possible 60 points). The second-ranked crop was safflower (29 points), just above chilies, which they use in great quantities. One of the lowest scoring crops was lathyrus, which received just 11 points. However, the women doggedly grow this crop year after year, defying an existing government ban against growing it. Thus a low score did not necessarily reflect their growing preference. Finally, green peas, which are highly valued on elite menus, scored the lowest (10 points).

This is just to illustrate how the crop preferences of rural women can vary dramatically from popular perceptions. As the reason behind each of these preferences unfolds it opens up a wide range of socio-agronomical arguments. The factors discussed below and the contexts described are extremely important in informing questions of research on biodiversity or its absence in a particular area.

Cooking time

Cooking time could be one of the most important factors in women's preference for a particular grain. Because, in rural communities, women are the procurers and managers of fuelwood as well as the cooks, the time it takes to cook a particular grain assumes great importance. In a participatory research exercise with women farmers to evaluate a particular variety of pigeon-pea, the women brought in cooking time as an important parameter. One of the reasons they preferred a particular variety of pigeon-pea over another was the fact that it cooks faster.

Fuel value

Crop residues can be used as fuelwood. Many of the crop varieties in dryland agriculture are preferred because they produce crop wastes that can be used for fuel. For women, it is a great advantage to have crop residues to burn in their stoves. Pigeon-pea wastes, for example, are excellent fuelwood and, therefore, are highly preferred.

Fodder component

In almost all parts of the agrarian South, women are the cattle managers. In Asia, where bullocks are widely used for farming, their care is a man's job; however, the care of all other household animals like milch cows, buffaloes, goats, and chicken, which are food providers, fall into the women's domain.

Women try to find more than one means of procuring fodder for their animals. They look for ways to combine fodder procurement efficiently with their other activities and, thereby, lighten their burden. For example, when women working as farm labourers go out to weed in the fields, they gather the green fodder to take home to their animals. Therefore, they prefer to weed in fields where they have a greater chance of gathering fodder, even when the wages they earn are lower than they might be on another farm. Fodder is not easy to purchase; therefore, it is difficult to estimate its monetary value. The kind of agriculture practised today, through its biodiversity, provides easier access to fodder. If that biodiversity were lost, it is not difficult to see how and why women would be adversely affected.

Similarly, in growing crops, women tend to choose varieties that also provide ample fodder. In the hills, where severe winters limit the availability of fodder to just 8 months a year, women do not favour the dwarf varieties of modern rice hybrids because their straw volume is very low. They would rather plant taller varieties that provide abundant straw, which can be stored to last through the harsh winter.

In rainfed agricultural systems, varieties of sorghum and pearl millet, which grow tall, find favour with women because of their fodder value. Sometimes when women sense a shortage of fodder, they prefer close planting of seeds in full knowledge that this will reduce grain yield. What they are looking for is denser stalk production for fodder, even if it means sacrificing grain security. Similarly, several pulses like pigeon-pea, chickpea, and groundnut, are also valued because their husks are very nutritious for cattle.

Taste

The question of taste is rarely addressed in formal research, although it is one of the most important qualities in crop selection, breeding, and planting by farmers. Women are constantly on the lookout for grains that have *better taste*. Their criteria may not necessarily be the taste factors we are used to. Our tastes are conditioned by what the media dictate. But rural women have their own taste parameters, which arise from their cultural conditioning. Because tastes are diverse, women prefer to grow a wide variety of crops on their fields to cater to their range of

tastes.

Easier access

Status foods are difficult to obtain for women in many rural societies and cultures. There is simply not enough to go around and what is available is for the more privileged. Women in rural communities are the last ones in the queue. Therefore, premium foods are more likely to appear on the plates of the more privileged: men and male children. For example, if meat is cooked at home, the finest pieces will go to men and male children. The leftovers are for women. Even though women are the cooks and food servers, self-denial is a valued cultural trait and, therefore, women are satisfied with leftovers.

A diverse cropping system is more likely to ensure that women also have access to *good food* because they grow a variety of grains: some high status and some low status. Apart from the main crop, farming practices ensure the growth of several other crops: pulses, oilseeds, vegetables, uncultivated greens, etc. Therefore, by increasing the variety of grains, which includes uncultivated foods, the women have better access to food.

In each culture, women have knowledge about the best *companion foods*. These foods are their best bet against malnutrition. A farming system that is adapted to diversity also ensures the emergence of uncultivated foods that *are* the companion foods. This is a great advantage to women because this type of farming system will give them access to large amounts of *wild greens and vegetables*.

Work availability

Agricultural biodiversity can also be used to even out the workload. Women, who constitute the largest source of farm labour, benefit from the use of diverse cropping systems in which all the work does not take place at the same time, but is spread throughout the year. Crop variety means that planting, weeding, and harvesting schedules for different varieties will occur at different times of the year. This protects women from becoming overburdened by an enormous amount of work, all necessary within a short time span.

Several projects that have brought new land under irrigation have reported extreme stress on women. Because irrigation promotes monocropping, the work season becomes short and intense. Women have had to form labour gangs, go distant lengths to complete work, and, in the process, found very little time for their children and home care. The result has been serious stresses on both the women and their families. This illustrates the significant differences in the roles men and women play in the management of, and benefits they receive from, such resources invested in these contexts.

Cultural characterization

In some parts of the world, crops are characterized as "male crops" and "female crops" on the basis of their market value. Those that bring money from the market are "male" crops, and those that do not go to market are "female." But women do not regard this as an affront. In fact, they

very practically convert this argument to a positive affirmation of their role in crop design. They say that they plant *low market value* crops to enhance the size of the family's food basket. The more low-value grains there are in the family's food basket, the better their nutrition. This is a positive notion that informs their world view of diversity.

There are also "masculine" and "feminine" lands. "Male" land has soils that grow premium cash crops, while "female" land grows hardy food crops. Strangely, less-fertile lands are characterized as "female" although, biologically, the reverse is true. The characterization has probably to do with the fact that women eat less food and less nutritious food and still carry on their reproductive responsibilities. This analogy of women being patient with less and less even while they are relegated to the bottom of the social ladder in poorer communities offers us a clue as to why "female" lands are perceived as less fertile. *Interestingly however, these are the lands that produce the maximum* range *of food crops.*

Levels of food security

It might be very important to investigate crop biodiversity in relation to gender at various levels.

At a personal level, when there is food diversity, women's chances of access to food also increases. In communities where diversity has not been disturbed, women do have access to food and, therefore, achieve better levels of nutrition. In parts of Bangladesh, within ready distance of their living space, women can find tubers, roots, nuts, fruits, and leafy vegetables. In such environments, malnutrition among women is a distant issue.

In environments where such diversity has been disturbed, women have become victims of insufficient food and poor nutrition. Diversity provides the option of access. Its absence increases risks.

At the household level, when diversity ensures food security, women feel safer. Their confidence levels automatically increase and this enables them to engage in other activities: self-developmental, community-oriented, political, etc. Absence of diversity and the consequent reduction in food availability to the family might prevent women from taking on larger socio-political roles.

At the community level, crop diversity also sends a signal of availability of different foods and, thus, an enabling environment to everyone to engage in a crop production system that puts every member of the community at ease. Its absence can particularly hamper women, who as seed and germplasm managers cannot exercise their right to plan crops. If they start growing crops that others are not engaged in, either they become vulnerable targets (all *evil* eyes will be on us) or are ridiculed for being unrealistic.

A national environment of support for biodiversity can make it easier for women to gain access to state credit systems for farming operations. In many countries in the South, misguided gender policies provide women with income-generating support, but simultaneously destroy the operation of feminine principles in agriculture. Therefore, a woman seeking a state loan for floriculture or aquaculture may easily get it, but she will be hard pressed to convince the

government to support her to grow a diverse food crop on her land.

Other suggestions

Sometimes, it may be important to look at the agricultural issues related to poverty without considering gender, although one must be very sensitive to some of the special needs of women. In the face of worldwide structural adjustment, traditional analysis of *gender roles* seems to be becoming progressively less relevant. More and more men migrate to metropolises and other urban centres to make extra money to subsidize their agriculture production. Under such circumstances, it becomes women's primary responsibility to manage agriculture. This appears to be the emerging trend in the South. Therefore, sustainable use of biodiversity vis-à-vis agriculture among the poor might become a gender issue itself. Diversity, seed access, market access — everything acquires a new context.

Health

Food is the single source of nutritional well-being and health. Provision of enough protein is a critical issue for women's well-being. When women characterize grains, they talk about some that satisfy their hunger, while others leave them feeling empty even right after eating. The "belly-filling" grains are an important component of a diverse food system.

In poorer communities, food is the first defence against illnesses. Many varieties of grains are important to women who make up the most vulnerable sector of the community in terms of health care investments. Women's illness is not given an urgent importance, whereas, if male children or men fall ill, medical attention is sought much more promptly.

To insure themselves against such vulnerability, women have several options. The first is food, and nutritious, preferred grains are a very important component. Little millet provides warmth to the body. If a woman suffers from fever, her first instinct might be to cook and eat some little millet and sleep next to a warm stove. Within no time, she will start sweating and thus exorcise her fever.

Mothers in most Asian communities are confined to bed and rest for a few months after childbirth. During this period, it is seen that they get *soft and convalescing foods*, as opposed to the normal coarse foods they usually eat. Thus the concept of *diet foods* is etched into the culture of rural communities. Women who have very few options in health care are the biggest supporters of this concept. In promoting crop diversity, it is important to understand local use of various foods.

Crop diversity is also an instrument for crop protection. Crop combinations create an environment for control of pest populations. When diversity disappears and monoculture takes its place, pests increase and chemical sprays must be used to control them. Although it is mainly men who spray pesticides, the presence of residues on crops and fields severely affects women. As weeders and harvesters, women are compelled to touch, smell, and inhale these harmful substances. A large number of pesticide-induced illnesses (skin cancer and lung diseases, for example) among women under these conditions have been reported.

Medicinal plants

This is an area that requires much research. What is crucially important here is the existing context of health care systems for women and their access to them. Whose health do the existing health care systems serve? and How much are women gaining from them? become the most critical contextual questions in terms of determining the role of medicinal plants in women's health — especially in rural and poorer communities.

In most parts of Asia, the primary health care systems set up by governments are either totally oblivious of women's health needs or are structured in such a manner that they deter women from using them. Women feel afraid and ashamed to go to hospitals, which are invariably operated by strange men who are hostile toward them.

By comparison, their own rural traditional health care systems put them into contact with people whom they know and who know and empathize with them. The resultant chemistry is always positive. This system depends on herbal medicines. More important, the gynecologic problems of women are always treated with these medicines. Women cannot take these problems elsewhere.

It may be important to underline here that many rural informal health care systems are *free of charge*. Healers do their job as a spiritual service to their communities. Therefore, no commercial interest supports their practice of not overexploiting their resource base nor creating a plant preference or hierarchy.

The question of plant diversity as a *life support system* for women needs greater articulation vis-à-vis *use for enhancement*. The use concept might raise a number of problems, such as the establishment of a plant hierarchy and the industrial use of medicinal plants.

Establishment of a plant hierarchy: Not all medicinal plants were born equal. Some have more uses than others and some have *more important* uses than others. Therefore, if there are two plants in a community — one potentially offering a cure for cancer and another that has an anti-diarrheal properties — in terms of *use for economic benefit*, the cancer-curing plant takes precedence. Communities will find that by growing more of these, they can earn greater benefits and, therefore, they may *actually replace diversity* and start a monoculture regime.

Interestingly, it is the low-end plants that are more often used for women's gynecologic problems. Therefore, a diverse plant system will offer women greater security. Once that system is gone, they will become more vulnerable than ever.

The possibility of a plant hierarchy is also a danger to the very concept of diversity. Plants always grow in companionship with each other, one plant creating the habitat for another. Favouring one kind of plant can completely destroy diversity.

Industrial use: Linking industrial use of medicinal plants with community benefits can also pose a problem. Industrial volumes are always high. Therefore, in areas where land has a limited

carrying capacity, industrial demand is bound to lead to overexploitation and consequent extinction of the medicinal plants themselves.

All these issues have a direct bearing on women's health. Many research questions need to be asked and answered. In the Sustainable Use of Biodiversity Program, if we are going to see monetary benefits for local communities, the question of how this would affect women and their access to health care becomes very important. Will it severely affect their articulation of their health care needs?

WOMEN'S STRATEGIC NEEDS

Leadership

The issue of biodiversity seems to be closely related to the issue of leadership by women — in both the traditional domain and modern fora. Women have been able to claim leadership on the basis of their contribution to their communities as managers of germplasm.

Agrobiodiversity has encompassed a wide range of crops, but seed control has stayed in the hands of women. Therefore, rural communities have always respected women's role as seed-keepers and accorded them leadership in recognition of the fact that their survival has rested in the hands of women. All matters related to seeds have been settled in consultation with women. Seed selection, seed storage, and crop planning have been the prerogatives of women giving them their traditional leadership roles.

Women held this leadership position, not just because they *physically* handled these tasks, but also because they *intellectually* contributed to the entire process. How to select the best seeds for the next planting season, the best methods of storing them (without allowing them to spoil due to storage pests or by rotting), how to plan crops through a judicious mix of seeds at the time of sowing were all the intellectual domain of women. The complexity of these tasks in terms of both conceptualization and execution and the facility with which women handled them gave them natural leadership.

Women's intricate knowledge of medicinal plants in a biodiversity regime was another factor that ensured women's leadership positions. A large part of the community depended on medicine women who had a myriad of home remedies springing from their knowledge of plants, bushes, creepers, leaves, flowers, and roots. Their concoctions comforted the ill and the suffering, creating a groundswell of respect and reverence for them.

However, disappearance of biodiversity, in all likelihood, would change this situation for women. Monocropping systems, where seed decisions might be made by markets and not by women, have the possibility of divesting women of their leadership. Even if women continue to handle seeds, their role in making a complex web of decisions might disappear, along with their intellectual leadership in the community.

In recent times again, in many parts of the South, leadership in talking about and supporting

biodiversity has come from individual women and women's groups. These give us a sense of an invisible thread that ties past biodiversity with the present. The issue itself is so inextricably *gendered* that in all articulation of the issue, women will take the lead.

Political roles

Along with leadership comes a political role. Biodiversity and its use for and within communities has accorded women a significant political role even within patriarchal structures. For example, during droughts, in anticipation of difficult times, what crop choices must be made? During long phases of drought and/or conflict, how does the community save seeds for better times? What crop mix keeps the community from external/political subjugation?

These are live issues — increasingly so, in days of structural adjustment, liberalization, and privatization in the South where governments are progressively shedding their obligations to the poor. This scenario highlights the role of women in food politics far more strikingly than before.

Furthermore, when the battles over TRIPS and intellectual property rights are fought in the years to come, biodiversity issues will push women into assuming a far greater political role than they have handled before in their lives. This situation has the potential to throw women from various classes, backgrounds, cultures, and habitations together: urban-rural, north-south, literate-non-literate, etc.

All these possibilities throw up a series of research questions for detailed probing.

Room to articulate views

Diversity was also an issue when women have found a place in public arguments within their communities. While looking for seeds, while making decisions about crops, while locating lost landraces — all these situations were excellent opportunities for women to find their voices. In several communities, although younger people make the initial seed selection, the final screening is left to the older women. Their opinions are heard with respect and followed.

All these factors — their leadership, political roles, and articulation — have given women clear visibility in the public domain.

Mobility

The relationship between mobility and biodiversity is double-edged. Gender theories speculate that mobility increases women's status. Although this is true, long traditions of biodiversity have been the result of *limited mobility*. Because women and men cannot travel far — women being many times more limited than men — diverse cropping systems supported a community's existence within its own space. In that sense, the empowerment of women in relation to diversity was a factor of their limited mobility. That women were capable of supplying their communities' needs without having to move far was a big plus. It also probably necessitated storing various crop varieties in a small land space, for example, within each individual holding or within a village. What will happen if this mobility is increased and there is plenty of space for women to

move around?

Control

The argument for *beneficial use* of diversity raises another question. In diversity regimes, crop planning and crop ownership rest mostly in women's hands. If we start applying biodiversity to commercial use, a dramatic shift in these gender relations may occur. As has happened with vegetables, milk, and non-timber forest products, control might automatically move out of women's hands.

SPIRITUALITY AND CULTURE

In addition to the easily quantifiable and/or understandable notions of quantity, quality, security, etc., there are some notions that are governed by the spiritual and cultural contexts of rural communities. These are manifested in rural women's analysis of their crops, seeds, plants, etc.

For example, some crops are characterized as *crops of truth*. They are supposed to be inexhaustible. In one consultation, a rural women described finger millet as the grain that keeps sending out more and more heads even as you harvest them. It is also a crop that you can thresh again and again. You will continue to get grains. It is never exhausted. It is a crop of truth.

For women, everything is humanized. They look at crop planting, germination, seed head formation, everything in a gender continuum. These are processes of life and reproduction, not much different from human reproduction. This "humanification" of agricultural processes is a critical element of diversity. The entire vocabulary of farming women is replete with references to their special world view.

When the streams and rivers flow full *Mother is bellyful and is flowing in content*

When the land is replete with diverse crops *Mother is heavily pregnant*

When the seed heads are forming *Mother is in birth pangs*

When seed formation is taking place *Mother is breastfeeding her children*

When women establish this mother-daughter relationship with the earth, the entire issue of what crops to grow and what not to grow simply does not arise. Removal of any food crop is akin to infanticide. In one exercise, agronomists showed women which were rogue plants and asked them to pluck them out because they did not belong with the dominant species on the farm. Women refused to do this, saying "they may be different. But they are plants nevertheless. They are life. If we pluck them out, it is like killing an infant."

However, women do weed. Isn't that a process of constantly picking and throwing away plants? Why does that not constitute infanticide? Can we probe deeper into this question and see whether, behind a spiritual front, women are actually guarding a key principle of diversity —

intraspecies diversity? In the highly risk-prone farming environment, no food crop can be ignored. Even if it is a *rogue*. And no food crop can be relied on, totally. It may be the rogue plants that survive the harshness of their environments and yield a few measures of grain. Why call them rogue and snuff the life from them?

In some parts of the Deccan in India, women observe a week-long period of isolation in communion with seeds. On the first day, they bring soil from an *untasted field*, put it into two earthen pots, and plant a variety of seeds in it. Then they carry out a week-long communion with the seeds. Every day they worship the pots and seeds a number of times and observe reverently: how do they germinate? how do they sprout? how do they grow? On the last day of the week, they take the pots and plant the seedlings ritually in their fields.

The highest spiritual levels to which diversity worship has been carried is embodied in the Hindu concept of *Navadhanya* (Nine Seeds). Nine seeds represent the Hindu cosmic vision of nine planetary gods, who rule the destiny of all human beings. This ritual is an essential part of all major worship; thus, the seeds and their diversity have been raised to cosmic proportions. Interestingly, it is the women who engage in this form of worship.

The key species of the plant kingdom have no obvious *practical use*, but enjoy a pre-eminent position in creating crucial habitat for other plants. Their ecological niche is revered. This reverence has been spiritually transferred to Hindu rituals. Banyan and Peepal, two of these holy trees are the gods of fertility. Women regularly worship these trees, and it is forbidden to cut them down.

This total spirituality that surrounds women's relationship with nature, crops, and seeds must be seen as a critical element in any study of women and diversity. This way of looking at crops and seeds as life adds a dimension that is a strict departure from contemporary concepts.

ACTIVITIES FOR RESEARCHERS

Identifying the research questions and their positions in the discourse on diversity is an extremely complex business. The literature on the subject might not suggest anything at all. If anything, it does suggest that one's foray into the field on the basis of this theoretical understanding can well be a walk into a minefield. Therefore, there is no option for researchers but to engage in regular fieldwork. Such a field activity can be made sustainable intellectually if it can be organized as a series of planned exercises.

Face to face meeting

The first step is interface with a community or a few communities. The field visit (fairly long — 2 to 3 months) should allow a number of relaxed encounters. Leisurely conversations, observations of various situations, focused discussions, PRAs — a toolbox of this nature should allow the researcher to understand the situations and contexts of biodiversity. This community/communities will remain the researcher's touchstone.

Dialogue

On his or her return, the researcher will engage in their background research, literature survey, and studies. This phase should also be organically interwoven with a series of interactions-from-a-distance with the community in the field. Much of the literature that might not have meaning earlier now suddenly starts to make sense. And with this unwrapping of knowledge, fresh questions spring up. The answers to these questions must come from the base community.

Follow-up

As the questions accumulate, a checklist emerges. What did I as a researcher think the issues were? Where have I moved since my first encounter with the community? Will my rebonding with it provide me with fresh perspectives? What perspectives am I seeking?

Once such a checklist starts forming, the researcher must pack her or his bags and head for the base community. This time, the interaction is shorter, more specific, direct, and pointed. By the end of this round, the researcher will probably have a portfolio of research questions that are a product of her or his informed understanding of the situation.

Updates

But no community or situation remains static. To keep up with the dynamic nature of community knowledge and practices surrounding biodiversity, a constant updating of information and data and their impact on research questions becomes extremely necessary.